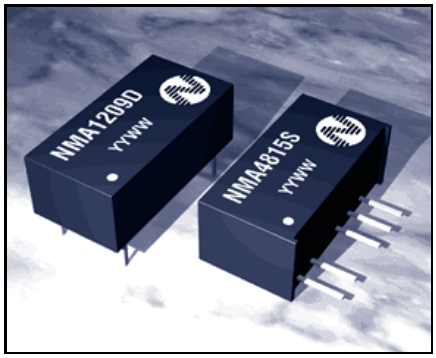
查询NMA0505D供应商

C&D TECHNOLOGIES
Power Solutions

# NMA 5V & 12V SERIES

Isolated 1W Dual Output DC-DC Converters




## FEATURES

- Wide Temperature performance at full 1 Watt load, –40°C to 85°C
- Dual Output from a Single Input Rail
- Industry Standard Pinout
- Power Sharing on Output
- 1kVDC Isolation
- Efficiency to 78%
- Power Density up to 0.85W/cm$^3$
- 5V & 12V Input
- 5V, 9V, 12V and 15V Output
- Footprint from 1.17cm$^2$
- UL 94V-0 Package Material
- No Heatsink Required
- Internal SMD Construction
- Toroidal Magnetics
- Fully Encapsulated
- No External Components Required
- MTTF up to 2.1 Million hours
- Custom Solutions Available
- No Electrolytic or Tantalum Capacitors

## DESCRIPTION

The NMA series of industrial temperature range DC-DC converters are the standard building blocks for on-board distributed power systems. They are ideally suited for providing dual rail supplies on primarily digital boards with the added benefit of galvanic isolation to reduce switching noise. All of the rated power may be drawn from a single pin provided the total load does not exceed 1watt.

## SELECTION GUIDE

| Order Code | Nominal Input Voltage (V) | Output Voltage (V) | Output Current (mA) | Input Current at Rated Load (mA) | Efficiency (%) | Isolation Capacitance (pF) | MTTF[1] kHrs | Package Style |
|---|---|---|---|---|---|---|---|---|
| **NMA0505D** | 5 | 5 | ±100 | 289 | 69 | 28 | 1697 | DIP |
| **NMA0509D** | 5 | 9 | ±55 | 270 | 75 | 32 | 682 | |
| **NMA0512D** | 5 | 12 | ±42 | 266 | 77 | 34 | 343 | |
| **NMA0515D** | 5 | 15 | ±33 | 263 | 78 | 36 | 188 | |
| **NMA0505S** | 5 | 5 | ±100 | 289 | 69 | 28 | 1697 | SIP |
| **NMA0509S** | 5 | 9 | ±55 | 270 | 75 | 32 | 682 | |
| **NMA0512S** | 5 | 12 | ±42 | 266 | 77 | 34 | 343 | |
| **NMA0515S** | 5 | 15 | ±33 | 263 | 78 | 36 | 188 | |
| **NMA1205D** | 12 | 5 | ±100 | 120 | 69 | 33 | 559 | DIP |
| **NMA1209D** | 12 | 9 | ±55 | 113 | 74 | 46 | 375 | |
| **NMA1212D** | 12 | 12 | ±42 | 111 | 75 | 55 | 243 | |
| **NMA1215D** | 12 | 15 | ±33 | 110 | 76 | 54 | 154 | |
| **NMA1205S** | 12 | 5 | ±100 | 120 | 69 | 33 | 559 | SIP |
| **NMA1209S** | 12 | 9 | ±55 | 113 | 74 | 46 | 375 | |
| **NMA1212S** | 12 | 12 | ±42 | 111 | 75 | 55 | 243 | |
| **NMA1215S** | 12 | 15 | ±33 | 110 | 76 | 54 | 154 | |

When operated **with** additional external load capacitance the rise time of the input voltage will determine the maximum external capacitance value for guaranteed start up. The slower the rise time of the input voltage the greater the maximum value of the additional external capacitance for reliable start up.

## INPUT CHARACTERISTICS

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|
| Voltage Range | Continuous operation, 5V input types | 4.5 | 5 | 5.5 | V |
| | Continuous operation, 12V input types | 10.8 | 12 | 13.2 | |
| Reflected Ripple Current | | | 20 | 33 | mA p-p |

## OUTPUT CHARACTERISTICS

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|
| Rated Power[2] | $T_A$= –40°C to 120°C | | | 1 | W |
| Voltage Set Point Accuracy | See tolerance envelope | | | | |
| Line Regulation | High $V_{IN}$ to low $V_{IN}$ | | 1.0 | 1.2 | %/% |
| Load Regulation | 10% load to rated load, 5V output types | | 10 | 12.5 | % |
| | 10% load to rated load, 9V output types | | 9 | 10 | |
| | 10% load to rated load, 12V output types | | 6.5 | 7.5 | |
| | 10% load to rated load, 15V output types | | 6 | 7.5 | |
| Ripple & Noise | BW=DC to 20MHz, 5V output types | | 40 | 75 | mV p-p |
| | BW=DC to 20MHz, 9V output types | | 25 | 50 | |
| | BW=DC to 20MHz, 12V output types | | 25 | 50 | |
| | BW=DC to 20MHz, 15V output types | | 20 | 50 | |

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Short-circuit duration[3] | 1 second |
| Internal power dissipation | 450mW |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Input voltage $V_{IN}$, NMA05 types | 7V |
| Input voltage $V_{IN}$, NMA12 types | 15V |

1 Calculated using MIL-HDBK-217F with nominal input voltage at full load.
2 See derating curve
3 Supply voltage must be discontinued at the end of the short circuit duration.
All specifications typical at $T_A$=25°C, nominal input voltage and rated output current unless otherwise specified.

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Isolated 1W Dual Output DC-DC Converters

## ISOLATION CHARACTERISTICS

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|
| Isolation Test Voltage | Flash tested for 1 second | 1000 | | | VDC |
| Resistance | Viso=500VDC | | 10 | | GΩ |

## GENERAL CHARACTERISTICS

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|
| Switching Frequency | 5V input types | | 110 | | kHz |
| | 12V input types | | 140 | | |

## TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | MIN | TYP | MAX | Units |
|---|---|---|---|---|---|
| Specification | All output types | -40 | | 85 | °C |
| Storage | | -50 | | 130 | °C |
| Case Temperature Above Ambient | 5V output types | | 33 | | °C |
| | All other output types | | 28 | | |
| Cooling | Free air convection | | | | |

## PIN CONNECTIONS

14 Pin DIP

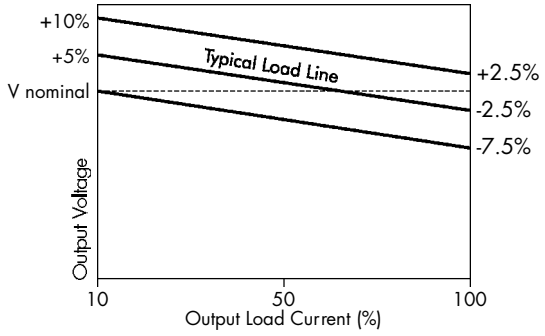
| PIN | |
|---|---|
| 1 | GND |
| 7 | NC |
| 8 | 0V |
| 9 | +V |
| 11 | –V |
| 14 | $V_{IN}$ |

7 Pin SIP

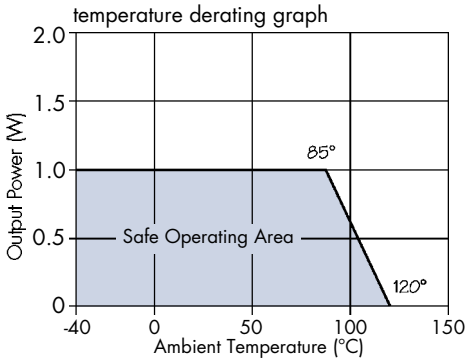
| PIN | |
|---|---|
| 1 | $V_{IN}$ |
| 2 | GND |
| 4 | –V |
| 5 | 0V |
| 6 | +V |

## PERFORMANCE CHARACTERISTICS

tolerance envelope



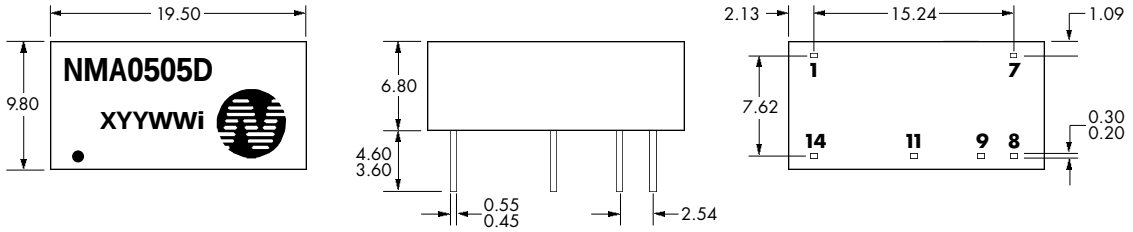

temperature derating graph




## MECHANICAL DIMENSIONS

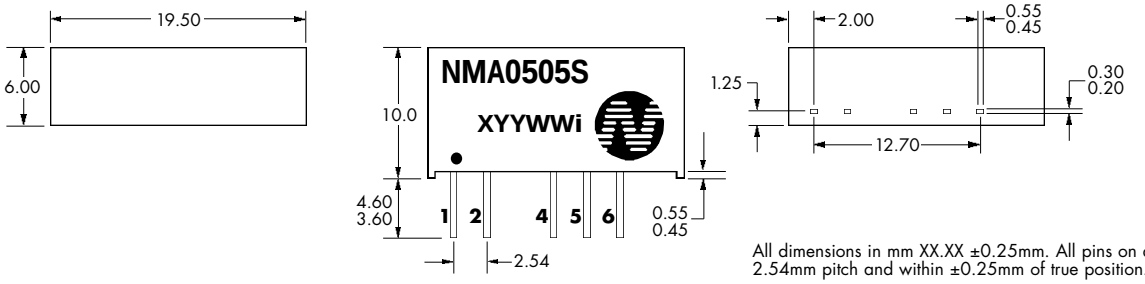
14 Pin DIP

Weight: 2.4g




7 Pin SIP

Weight: 2.1g




All dimensions in mm XX.XX ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.

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